

## OPTICAL TRANSMISSION SYSTEM FOR COMPENSATING FOR TRANSMISSION LOSS

### Abstract of the Disclosure

An optical transmission system for compensating for transmission loss includes a transmitting apparatus for serializing a plurality of  $n$  ( $n$  is a natural number)-bit channel data received from the outside in response to a predetermined clock signal, converting the serialized channel data and the predetermined clock signal into a current signal whose magnitude changes corresponding to an error detection signal, and outputting optical signals having optical output power corresponding to the magnitude of the current signal, a first optical fiber for transmitting the optical signals, a receiving apparatus for recovering the  $n$ -bit channel data and the predetermined clock signal from the optical signals received through the first optical fiber, detecting transmission loss generated when the optical signals are transmitted and received, optically converting the transmission loss, and outputting the optically converted transmission loss as the error detection signal, and a second optical fiber for transmitting the optical converted error detection signal to the transmitting apparatus. Since the receiving apparatus and the transmitting apparatus forms a closed loop, it is possible to keep optical efficiency uniform, corresponding to the transmission loss transmitted by the receiving apparatus. Also, the parallel/serial data converter is realized by the gate, it is possible to convert data at high speeds of greater than the GHz level and to reduce the size of the circuit. Also, it is possible to reduce power consumption since the non-overlapping clock signals whose frequencies are relatively low are used even when data is converted at high speeds greater than the GHz level.

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